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Wildlife and Related Natural Resources

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Editorial

WILDLIFE NEEDS YOU

"Wildlife Needs You" will be the theme for the 41st annual observance first proclaimed as Wildlife Restoration Week by President Franklin D. Roosevelt in 1938. March 19 through 25 are the dates designated for the 1978 event. The observance has been sponsored each March by the 3.5 million-member National Wildlife Federation (NWF), the nation's largest conservation group.

A peregrine falcon and the inscription "Wildlife Needs You" chosen for the 1978 poster, is reproduced on our back cover as a symbol of the need for public concern over wildlife.

"The peregrine was once threatened with extinction by pesticides," says Wildlife Federation President Ray Arnett, "but when the public got concerned and did something about pesticides, the trend was reversed and the bird may now survive."

In all of the United States, only about 20 active nests were known to exist in 1969-70. A slow turnabout began after Congress, in 1972 responding to the demands of conservationists, virtually outlawed the use of DDT and similar pesticides in the U.S.

In 1973, 20 peregrines were hatched at Cornell University in New York. By the fall of 1977, about 133 young birds had been released in the wild, both east and west of the Rocky Mountains. The Laboratory of Ornithology at Cornell hopes within the next seven years to

establish some breeding pairs in the wild in the east and to increase the number of productive nests in the west. Positive programs can produce results.

"There are many things we can do to foster a healthy and abundant wildlife population in this country," said Arnett. "Wildlife Week will emphasize education, legislation and citizen concern.

"The preservation of wildlife habitat is one of the areas in which wildlife needs our help. In the past year, millions of dollars were spent by the federal government to preserve habitat, but billions were also spent to destroy it."

As an example of recent legislation benefitting wildlife Arnett cited the 1977 law regulating strip mining. "This act, requiring restoration of land, will aid wildlife in some areas," he said. "And some of our threatened and endangered species are making comebacks thanks to other environmental protection laws--on water pollution, coastal zoning and ocean dumping. The National Environmental Protection Act, the Endangered Species Act, and the national wildlife refuge system are also important and have helped, for instance, to replenish the whooping crane population from a low of fewer than 25 birds to more than 100 whoopers today."

"What we need," Arnett emphasized, "is a strong feeling for and full understanding of the ties between men, wildlife, and the environment. When everyone understands their interdependence, then the outlook will be better for all three."

Letters

READER CORRECTION

I found "Test Your Survival IQ" in the December, 1977 issue to be interesting, but it does contain serious misinformation about crossing a chest-high mountain river.

It is dangerous to try to stand in swift water that is much above the knees. If you find yourself in this kind of water, you must float facing downstream and keep your feet up and in front of you. This way, you can see where the rocks are, and your feet will hit the rocks first. Probably the easiest way to cross a chest-deep mountain river, though, is to avoid all that mess and simply walk a few yards up or down stream to a shallow rocky place and hop across the rocks to the other side.

Michael W. Harvey
Culpeper, Va.

BIRD WATCH SUCCESS

The 12th annual Thanksgiving Window Watch Bird Count attracted more than 550 participants on November 24, 1977. The article about the count that appeared in Virginia Wildlife created a surge of new interest in the project, almost doubling the number of watchers reporting.

To everyone who took part, we would like to say thanks for your participation. In order that every part of the project may be useful, the commemorative stamps from the envelopes are sent to the Florida group that sorts and sells them to "Save the Bald Eagle." Your used envelope goes into paper-recycling.

We hope to hear from all of you again next year!

Myriam P. Moore
Lynchburg Bird Club

GUESS YOU NOTICED...

If you thought the February editorial page had a familiar ring to it, you were right--it also appeared in December. It's not that we are running out of material. The company that physically puts Virginia Wildlife together for us went out of business about mid-month and in the scramble to pull the pieces together, we ended up with the wrong piece. We are sorry, but under the circumstances we were lucky to end up with a February issue at all -
- Editor

Natures Better Mousetrap:

The Barn Owl

BY C. J. COWLES

The barn owl, with its world-wide distribution, has probably captured man's interest more than any other owl. These silent hunters of the night not only have been credited with infinite wisdom but also as harbingers of doom. The latter is the more accurate description, particularly from the point of view of the timid field mouse. Here in Virginia they occur locally throughout the state. Although their preferred habitats are open grasslands and farmlands, they can be found almost anywhere. Nesting pairs residing in the tower of the Smithsonian Institute in Washington or those of the range light towers in the mouth of the Savannah River are testimony to their versatile nature.

Members of the owl family, the Strigidae, are noted for special adaptations that make them highly efficient in performing their beneficial role as predators. Their eyes, with super-large retina cells, can pick up light intensities as low as 73 millionths of a foot-candle! A foot-candle is the intensity of light on a surface held one foot from a burning candle. This is not all to the birds' advantage though because they then lose focusing power. However, an enlarged opening of the pupil compensates by spreading the image over more retinal cells and an exceptional ability to rotate the head increases their field of view.

But eyesight isn't the only thing in a barn owl's bag of tricks. Experiments in rooms with no light have shown them to be capable of capturing prey using sound alone. This is accomplished by large, slit-like ear openings that run nearly the whole width of the skull. These openings are bordered by the edges of the heart-shaped facial discs that give them their unique monkey-faced appearance. Stiff facial feathers help to control sound reception and allow

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them to scan their environment for the sounds of scurrying mice.

In addition to all of this is completely noiseless flight which eliminates confusing sounds. Special downy feathers and large, wide wings are the key to flying quietly. By the way, although specialized for all the night life these birds can see perfectly well in daylight with no discomfort.

Equally fascinating is their hunting behavior. As soon as darkness falls and the nocturnal rodents are active, the barn owl will leave its roost, often a deserted building or tree cavity. It flies just a few yards above the ground using a rhythm of a short series of wing flaps followed by a swooping glide. Its route over fields and fence lines is the same night after night as it tirelessly searches for prey. It is quite likely that barn owls stake out a hunting territory from which other barn owls are driven. As it glides down to catch a careless mouse, the owl's head is held down in line with its target and the feet swing just behind. At the last moment the feet are brought forward at the same instant that it lifts its head and their sharp talons pluck the unlucky rodent from the ground. If the owl is nesting, it may carry its prize off to the young or otherwise it may just eat near the place of capture. Manners are not too important, the mouse is easily swallowed whole. The sharp bill and talons quickly reduce a rat to bite-sized pieces.

If you have chanced upon a roost you have probably seen evidence of these midnight meals in the form of pellets. Barn owls usually regurgitate two hard, black, and shiny pellets each day. They consist of bone and other undigestible material that is compacted into a cylindrical pellet about an inch long. Scientists have determined what the owls eat by examination of these pellets. Unlike other owls, the barn owl is a bit of a gourmet, feeding almost exclusively on mice and rats.

In a study of barn owls in California, sixty percent of their diet was rats, the remainder meadow mice. It

was estimated in Michigan that up to ninety percent of barn owl diet consisted of meadow mice. Out of twenty-two pellets examined, the remains of forty different mice were found. Captive barn owls have been found to eat about ten percent of their weight in mice per day or about two ounces. This is the equivalent of three mice, and likely to be less than what a wild, active owl would require. A little simple arithmetic and one can easily see that these owls can save a farmer a lot of lost grain.

Like other predators, barn owl populations reflect the level of their prey's population. It is estimated that owls may capture up to twenty percent of a local rodent population. This, of course, is not enough to account for the periodic population crashes characteristic of some rodents. If there are many barn owls in a locality it doesn't mean that there will be a noticeable decline in rodent problems. On the other hand, a scarcity of barn owls may mean a scarcity of prey or roosting sites. In Europe, declining barn owl populations have been linked to pesticide use but it does not seem that they have been adversely affected in this country.

Although these professional hunters cannot be expected to solve rodent problems, they certainly can be considered a welcome addition to farm and suburban environments. The Europeans have long recognized their value, to the point of making

special entry holes in barns and equipping lofts with nest boxes.

Nesting takes place between April and July. If it is a good year with plentiful prey, a second brood may be raised. The nest could be located in an old barrel, rock crevice, on the ground, or, of course, a barn. Three to seven pure white eggs are laid in a ring of the female's droppings and pellets; there is no true nest. During an approximately thirty-three day incubation period the female is fed by the male. After hatching both adults deliver small rodents to the nestlings. At about nine to twelve weeks of age the youngsters are fully feathered and ready to leave the nest. They will be fed occasionally by the adults until fall when prey becomes scarce. Hunting does not come easily to the young owls; they must learn by trial and error. It is during these first few months when Nature takes her toll and only a few of the juveniles are destined to survive. Dispersal from the nest is probably the major journey in the life of a barn owl. They do not migrate like other birds of prey, although they may travel long distances in search of better hunting grounds.

Remember, should you be lucky enough to find a barn owl roost or nest that it is unlawful to disturb or remove them. But don't let that discourage you from unobtrusively watching their comings and goings - and marveling at the magnificent hunters of the night.

Owlets are hatched covered with white down. Later they develop brownish speckled feathers.



HOT & COLD FISHING

HOW TEMPERATURE AFFECTS
YOUR ANGLING SUCCESS



BY JAMES J. MCHUGH AND MITCHELL D. NORMAN

Many fishermen are aware that various species of fish are most easily caught at certain times of the year. For example, many crappie are caught in the early spring, but channel catfish fishing is best in the hottest summer months. These changes in fishing success are largely dependent upon the behavior of the fish at various water temperatures. That is, catfish are the most active when the water is very warm and thus most are caught at this time. Since fish are cold-blooded animals, their lives are regulated largely by water temperature. Temperature influences fish and their susceptibility to angling in many ways. For example, temperature determines to a large extent a fish's metabolism and thus rate of feeding. As a general rule, the metabolic rate of all warmwater fishes becomes quite slow below 55 F. The fish become rather sedentary below this temperature and any movements are quite sluggish. Therefore, less food is required for warmwater fish in cold water. With increase in water temperature, fish become more active and require more food. The optimum water temperature for metabolism, of course, varies between species. Also for each species there is a maximum temperature, above which metabolism remains the same or decreases. Water temperature may indirectly influence the catch rate for fish by determining fish distribution. For example, high water temperature (75-80 F) may cause fish to move to cooler water with higher oxygen. If fishermen cannot locate fish, the catch rate then declines. There are many factors other than water temperature that help to explain why fish bite. Only a fish knows for certain.

Biologists and fishermen can make educated guesses. But for the purpose of this article, only water temperature will be discussed.

Personnel of the Fish Division of the Commission of Game and Inland Fisheries have conducted a study to better define the relationship between fishing success and water temperature. Lake Brittle is a 77 acre Commission-owned lake located just off Route 29 in Fauquier County. The major sport fishes in this lake are bluegill, black crappie, largemouth bass, and channel catfish. For many years, all fishermen using Lake Brittle have been interviewed to determine hours fished and the numbers and weights of each fish species creeled. In addition, the water temperature (3 feet below the surface) has been taken each day at 7AM. This work has been faithfully carried out by the concessionaires at the lake, Mr. and Mrs. John Bannister.

All information collected during 1974 through 1976 has been compiled to better define the relationship between fishing success and water temperature. This was done by summing the hours fished and the total number of bluegill, black crappie, largemouth bass, and channel catfish caught on all days of equal water temperature. Using the hours fished and the number of fish caught, the catch rate (number of fish caught per hour of fishing) for each species could be computed. Such catch rates were obtained for each species for all water temperatures between 44 and 83 F.

Figure 1 shows the resulting catch curves. These curves are based on three years of data representing

100,000 hours of fishing and the harvest of almost 50,000 fish. The peaks of the curves indicate the water temperatures at which fishing for each species is most productive. These peaks generally occur at temperatures slightly less than the preferred spawning temperatures of each species. This indicates that the fish are most active while seeking acceptable spawning sites. This observation is in agreement with the results of studies conducted in other states.

The curve for largemouth bass shows two peaks. The peak at 62-63 F is the expected pre-spawning peak. The high catch rate between 45 and 50 F is believed due to a very high percentage of bass fishermen during the colder months. Because most of the fishing during this cold period is specifically directed at bass, the catch rate has been inflated, relative to other times during the fishing season.

Figure 2 gives daily water temperature from March 1 through November 30. These figures are the averages for the years 1970 through 1976 and are variable from year to year depending upon weather.

Using Figures 1 and 2 you can now determine the optimum water temperatures for these species and the time of year these temperatures should occur. For example, black crappie fishing at Lake Brittle is best when the water temperature is 59-62 F. In an average year, these water temperatures occur during the periods April 27 - May 12 and October 4 - October 17. The peak in the catch curve for channel catfish occurs at 75 F. This water temperature is typical of mid-June and early September. One should not interpret this to mean that he should fish for channel catfish only during these periods. As can be seen from the graph, the

Figure 1 (below) illustrates the pattern of the recorded catches for the major sport fish species of Lake Brittle. Figure 2 (above) shows the average water temperature of the lake at the 7 AM check time.

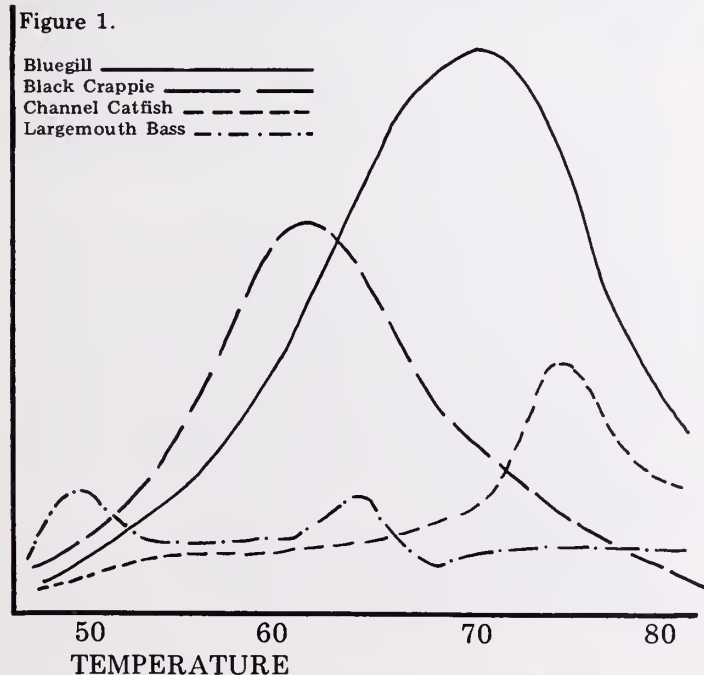
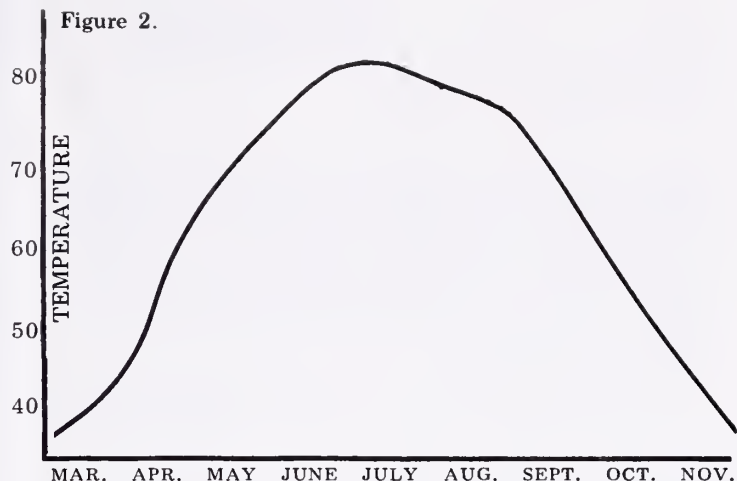


Figure 2.



catch rate for channel catfish is quite high within the temperature range of 70-80 F, or throughout the summer months. Bluegill fishing is at its best when the water temperature is approximately 72 F. However, good catches of bluegill can be taken within the 65-75 F range. This water temperature range at Lake Brittle can be found during the periods of mid-May to mid-June and early September to early October.

Much information useful to fishermen and fishery managers can be obtained from a study of this type. The following are just a few examples:

1. Black crappie spawn in the spring before largemouth bass, bluegill or channel catfish. This gives their young an advantage over the young of other species. This early spawning behavior is, in great part, responsible for the over-abundant crappie populations found in many small lakes.

2. Channel catfish prefer higher temperatures than other species and may be caught with good success during the hot summer months. Channel catfish are stocked extensively throughout Virginia each year. In many lakes, an average channel catfish may weigh 2 to 4 pounds and fish exceeding 20 pounds are not uncommon. Most populations of this species are underfished. These populations could be more heavily exploited if fishermen would use the catch curves presented in this article as a guide for catfish angling.

3. Although peaks in the bass catch rate can be observed, successful largemouth bass fishing is amazingly consistent throughout the year. This may be a reflection of the sophistication of bass fishing. Many bass anglers fish throughout the year and modify their techniques according to the season. This is generally not the case in fishing for other species.

This article is not meant to encourage fishermen to fish only at certain times of the year. In fact, the authors fish whenever they have the time and inclination, regardless of the water temperature. However, you may want to try your luck with different species. If so, this article is meant to provide guidance and encouragement. Good Fishing.

EDGE OF THE WOODS

BY MICHAEL R. MASON

The narrow zone surrounding a typical eastern farm field is an area packed with interesting and varied life forms. These forms are dependent upon one another in ways which are as interesting as they are varied. At the edge of the field where nature competes with man for growing space there is a world teeming with its own special natural beings.

This study took place in Virginia Beach. The land there is absolutely flat and only a few feet above sea level. As soon as the rain stops this spring the field will be put into beans by the owner. The woods were cut for timber about 30 years ago and the owner will cut again this fall to help pay taxes on his land.

The trees, which will probably be sold for pulpwood, are of two types: loblolly pine and sweet gum. The loblollies are the tallest trees in the stand, some of them 40 feet high. Loblollies grow quickly in comparison to other trees, sometimes attaining a height of 10 feet in 5 years. Perhaps an abundance of sunlight is the greatest stimulus for the loblolly. Despite its rapid rate of growth, the loblolly does have its drawbacks. The tree is not noted for its strength, since wind storms take a great toll, sometimes splintering their long slender trunks violently.

The needles from the pines help cover the ground and tend to cause the topsoil to be slightly acid. Grass does not flourish beneath the pines. The seed cones are a major food source for the squirrels. A great many squirrel nests appear to be located in the swaying tops of these plants.

The sweet gum trees are the other most represented tree in this zone. The sweet gum is a deciduous tree, its leaves turning brilliant shades of red and yellow in the fall and then covering the forest floor in a rich carpet for the winter. The gum leaves appear to be the chief component of the humus, mulch and ground level mat.

The prickly 'gum balls' or seed pods which lie scattered about beneath the sweet gums are an excellent and highly accessible food source for many varieties of animal life. The wood of the gum is commercially valuable only for crates, boxes and interior finishes.

There were a few other tree species noted in the zone: red maple, black oak, swamp (bay) magnolia and tulip poplar. These species are widely scattered and probably have no consequential influence on the ecosystem.

Closer to the ground the plant growth is composed mostly of myrtle bushes. The myrtle is a shrub-like bush which affords ideal nesting habitat for small birds which nest 5 to 10 feet above the ground. The myrtle does not grow in the open and so appears to be much more suited to woodland growth than field. Catbriar

vines give way to honeysuckle as one moves into the open at the edge of the field. Honeysuckle provides pollen for honeybees and other flower-visiting flying insects. The dense underfoliage provides cover for rabbits and small animals.

On the field side of the zone, grass is the natural plant cover found directly at ground level. Grass provides foraging for rabbits and deer. Also afforded is erosion protection. Rainwater running directly off a field can quickly carry away valuable nutrient-rich topsoil. The ground level plant cover in the woodland side of the study zone is represented sporadically by the broom moss. Broom moss, as is typical of all mosses, absorbs great amounts of water and thus plays an important part in the prevention of soil erosion. In areas of lesser exposure to sunlight, fiddle-head ferns can occasionally be seen. These ferns seem to prefer the more acid soil beneath the pine trees.

During field excursions to the study area to look for evidence of animal life, it was noticed that the greatest number of animal signs occurred at the very edge of the woods. Rabbit signs seemed to be the most abundant.

The Eastern cottontail depends, for the most part, on grass for nourishment. The best hours for feeding are in the morning when the grass is covered with dew. In this manner the cottontail does not venture far from the dense honeysuckle and briar cover at the edge of the forest. The entire range of a cottontail for his lifetime is only about 2 acres. He depends on his knowledge of his area and its escape routes for his survival. Stands of newly planted and tender young green beans (or any other truck crop) are an added bonus to the rabbit population. The cottontail, however, will continue to restrict his feeding to the very border of the field.

Field mice above ground and moles below can be depended upon to collect their share of the crops each year. The chief predators of any mouse that ventures too far from his hole are hawks, crows and occasional black snakes.

The gray squirrel is a common visitor to the edge of the woods. He rarely goes into the field. His domain is among the trees where nuts and seeds form his main diet. In winter the squirrel prefers the deeper woods with its hollow trees. In summer, however, the squirrel builds a nest of leaves and twigs in the swaying tops of the border trees. Squirrels bury nuts and seeds to store them. This is equivalent to planting. Those seeds which are relocated and eaten by the squirrel have a good chance of germination.

The only other mammal of consequence noted was the white-tailed deer. These essentially woodland ani-



Areas like these provide wildlife with a productive and unique habitat.

mals can be ruinous to crops and thus compete directly with man. The white-tailed deer of this locale have no natural predators. Man and feral dogs do provide some sporadic population control. Occasional disease outbreaks decimate the deer. Raccoon and opossum are sometimes identified as nocturnal visitors to the woodland border. This is especially so during the harvest season.

The bird life at the interphase is well represented. Quail seem to be the most predominate. The bobwhite quail collect in coveys at the very edge of the fields, just inside the honeysuckle and briar zone. Quail prefer much the same habitat as the cottontail rabbit. Their diet consists mainly of grass seeds, although they do feed on pine and sweet gum seeds.

Sparrows make up much of the remaining bird population. They flit about in constant search of seeds. Sparrows nest close to the ground in the myrtle bushes and sometimes in the larger thickets of honeysuckle.

Mockingbirds, robins and thrushes inhabit the border zone also. These members of the thrush family are primarily insect and grub eaters. Strong territorial instincts place extremely narrow limits on their populations. The mockingbird is very aggressive in the defense

of his assumed area. Hawks and crows occasionally swoop into the border zone to remove one of its less fortunate inhabitants. A nocturnal owl may silently snatch an unwary mouse from the forest floor.

Bees are perhaps the most important insect form to visit the border ecosystem. Their flower visiting flights provide the flora with necessary pollen transport. Any man owning an orchard can attest to the value of this service. The seemingly most abundant insects are the ants. Literally combing the ground surface, they glean every edible particle they encounter for their nests below ground. These minute little creatures are the garbage collectors.

Beetles and sow bugs push in, around, and through the humus layers. Spiders snare and pounce on any bug entering too close. Butterflies and true flies flutter and buzz about right inside the border. These insects all provide nourishment for the bird and small animal inhabitants of the zone.

The soils of the interphase are different in composition on the very top layers only. In the wooded sector, soil is topped by a layer of humus. This layer is composed of decaying leaves and pine needles. The humus layer itself is stratified. The more intact and recent leaves and needles form the upper surface, with older and more broken down material composing a mulch layer below.

On the agricultural side, the soil appears to be leached on the surface with unconsolidated sand grains easily apparent. The agricultural soil is probably fertilized artificially since annual rainfall probably leaches most of the nutrients away. The field appears to be fairly level with little rapid runoff. Rainwater collects on the surface in a few areas making these more persistently muddy. However, the standing water problem is probably seasonal.

The field is subject to greater temperature fluctuations during the day. This fact is due to the lack of thick vegetation which tends to moderate temperature change. The foliage of the forest reflects the direct rays of the sun. The vegetation also acts as a windbreak. A breeze may be blowing across the fields, but only a slight draft will be felt just 20 or 30 feet inside the woodland zone. Because of the plant transpiration going on in the forest, the humidity can be expected to be a bit higher in the woods. Moisture evaporates much more quickly in the direct sunlight of the open field.

If the owner left the field for just five years, he would need more than just a plow and mower to reclaim his land for agricultural use. The grasses, pines and sweet gums would choke off that little two-acre field in a very short few years. In nature most land clearing is accomplished by fire. A stroke of lightning on a dry day might start the clearing of a meadow which grows back into the forest from which it was burned. Whether man or nature does the clearing, the very border of the field seems to be where the action is.



BACKYARD BIRD HAVEN

BY CARRIE L. EARMAN

Displaying color and speed, it suddenly lands on the lawn, hops toward the house, and turns its head sideways to absorb the sounds of the world. Just as you are captured by curiosity at the sprightly but serious creature, it lifts skyward and lightly drops onto a welcoming branch. From the chosen perch, it begins its cheerful song...

Many people desire to attract these feathered friends into their home grounds to contribute to the survival needs of our birds. This enables the contributors to easily observe the intriguing creatures while they gather to take advantage of the offerings.

Countless types of bird feeders have been constructed out of mater-

ials from tin cans to coconut shells. Bird houses have been designed to resemble miniature mansions and ornamental bird baths have been made in various interesting forms. Proof of man's interest in birds for self-satisfaction and environmental purposes!

These expressions of creativity shown in manmade devices, an artificial means, is only one way to lure birds into the desired area. A more natural and effective method is through landscaping. This method of planned planting encourages more flying visitors because of the natural habitat it provides. It also enhances the beauty and value of the home in the process.

The cost of landscaping can be kept at a minimum if you do the muscle work yourself. You also need

a rough plan before you begin planting, which will eliminate any wrong moves in the location or size of the selected plant. You can also save money by using wilding transplants, perhaps from the spacious grounds of a friend or neighbor.

The birds coasting overhead searching for their version of McDonalds or Holiday Inn will check into your home grounds if they have available the food or shelter necessary. In return for the conditions you provide for birds, they will help you in the elimination of certain insects that find pleasure in biting flesh or destroying plants. They will also brighten up your grounds with color and song, adding that touch of life to complete the picture of nature you have worked for.

There are various shrubs and trees that produce colorful berries, fragrant flowers, or that shimmer with radiant, autumn glows. When planning your design, select the ones that are attractive to your own eye, yet still provide food and cover for birds. This way you are naturally contributing to our ecology - and your own entertainment as well!

There are many dual purpose plants that will provide the essentials for bird life and still create a lovely landscape conservation design, advertising your grounds for those feathered consumers in the sky. Since these "consumers" live from 3 to 10 years, you can learn to recognize the same talkative, tawny robin or the acrobatic finch that visited you before. Imagine having breakfast with the same bird each morning, who is just outside the window on the branch of a white flowered dogwood tree!

As you plan your landscape, study the existing plants in your yard to ensure a variety of form and color. Birds, like people, enjoy a diversity in their diet and are especially attracted to bright colored berries. They construct their nests in trees that also provide shade for man's benefit on days when the sun is out to play. They find shelter in dense

shrubs and hedges that can reflect personal artistic design when trimming is due!

Some plants will supply bird food during all seasons of the year. By establishing the type of food produced and the season it will occur, you can keep your tenants on a year round basis. You can also plan for this food supply to appeal to the largest number of species possible.. This will result in a combination of bird families for you to come to know.

When planning your design, you might consider the height of the selected tree or shrub in order to visualize the appearance of the finished grounds. You may also find out the types of leaves the plant will have, a factor to birds seeking shelter or reproductive areas. Those plants with deciduous leaves, or those dropping off yearly, don't supply year-round shelter, as do the persistent ones. Shapely shrubs, hedges, and vines are desirable for these purposes, as birds need protection from weather and predators - and privacy too!

Just as you take time in choosing a coordinating outfit to wear, so should you take care in selecting plants for your grounds. Plants also have their own wardrobe of color. If you find out the fall color and the type of bloom the tree or shrub will have, you will know which shimmering autumn shade to expect and the shape, color, and fragrance of the flowers. This will aid in creating a

mixed, attractive design in your yard, with colors and blooms you have chosen yourself.

After carefully planning the type of plants that will create your personalized Garden of Eden, you should arrange to place them throughout your yard so that they can be easily observed. This way, after the birds move in, you can watch them as they take advantage of your available Utopia.

Perhaps from the kitchen window, the patio, or the front porch you can witness their activities. Collecting scraps of string and twigs to construct their nests, pacing over the ground until a worm is spotted and carried up to the youngsters with growling stomachs, two "love birds" flirting with one another from a flowered branch, a group playing hide and seek, or one sitting alone catching a nod - these spirited creatures in their seemingly carefree world are a true pleasure to study!



Bluejay



Black-capped Chickadee



White-breasted Nuthatch



Purple Finch

The extra bonus is knowing you have helped to supply them with their work and playground.

Of course, the selection of food and shelter-producing plants will depend largely on those adapted to our Virginia location. I have selected a few plants native to Virginia to give examples of the multipurposed plants available. These examples are both suited to bird habitation and are also very pleasing in appearance...the objectives to attracting our birds through this natural way of landscaping.

These are just a few of the many plants available for this purpose. You can gather more information through your local nurseryman, your Soil Conservation Service, or your Forest Service.

Pyracantha is an attractive shrub and a preferred food for some birds, particularly Cedar Waxwings and Mockingbirds.



Autumn Olive is very popular with feathered consumers.

AUTUMN OLIVE

This is a large shrub that reaches 10 to 15 feet at full growth. Attracting

approximately 25 species of birds, its wide spreading branches offer excellent summer cover. In the spring it produces small, yellow flowers, popular for their rich fragrance. During the fall and winter, from September through February, it produces bright red berries, a favorite of hungry birds. This valuable plant can be obtained from a nursery.

VIRGINIA CREEPER (*Parthenocissus quinquefolia*)

This is a ground or climbing vine serving approximately 37 species of birds. It produces blue to black berries from August to February, supplying birds with food throughout winter. It also provides good covering and nesting locations for birds. Ornamental along buildings or walls, this plant can be obtained from a nursery and also from wilding transplants.

HIGHBUSH BLUEBERRY (*Vaccinium corymbosum*)

This is a shrub that grows from 5 to 10 feet at full growth. Serving approximately 36 species of birds, it provides excellent summer feeding with the fruit it bears from July to October (also tempting to man's tastes). It provides fair covering, and when in bloom, has white, fragrant flowers. It turns a brilliant crimson in the fall. The leaves are deciduous, dark green and leathery. This shrub can be obtained from a nursery and also from wilding transplants.



NEW BOBCAT & OTTER TAGS ANNOUNCED. Virginia trappers planning to sell their pelts to overseas markets will be required to have a special metal tag as a result of instructions received by the Game Commission from the Endangered Species Scientific Authority. This new tag will be in addition to the Commission's regular bobcat and otter tags. The new tags will be issued on Saturday March 11, 1978 and Monday March 13, 1978. Tagging will begin at 1 P.M. at the following eight locations: Sumerduck, C. F. Phelps WMA, Rte. 651; Farmville, Virginia Division of Forestry Office, East 3rd Street; Tappahannock, Livestock Market, Airport Road; Suffolk, National Guard Armory, Goodwin Blvd. North; Edinburg, National Forest Service Work Center, Shenandoah Ave.; Staunton, Game Commission Field Office, Rte. 254 West; Blacksburg, National Forest Service Office, West of Rte. 460; Abingdon, State Forest Service office, two miles south on Rte. 11. The Endangered Species Scientific Authority has authorized the Game Commission to seal 585 otter and 1,500 bobcat pelts. Should a situation develop where there are more pelts than allotted tags, a lottery will be set up in order to fairly allocate the tags to the individual trappers.

ACADEMY OF SCIENCE TO MEET IN MAY. May 9-12 will be the dates for the annual meeting of the Virginia Academy of Science and Virginia Junior Academy of Science. The meeting will be held at Virginia Polytechnic Institute and State University, Blacksburg. For information contact Dr. Ralph A. Lowry, School of Engineering, University of Virginia, Charlottesville, Virginia 22903.

FISH AND WILDLIFE GAIN POPULARITY. More than 95 million people nine years old or older enjoy fish and wildlife-related activities in the U.S., according to the "1975 National Survey of Hunting, Fishing and Wildlife-Associated Recreation" released late in 1977 by the U.S. Fish and Wildlife Service.

The Survey, conducted every five years by the Service, estimated there were 20.6 million recreational hunters, 53.9 million recreational fishermen, 15 million wildlife photographers, and 49.3 million wildlife observers in 1975.

The 20.6 million hunters, 92 percent male and 8 percent female, reportedly participated in 478.6 million days of hunting. They spent \$5.8 billion for hunting activities, but valued those activities at \$84.9 billion per year.

The 53.9 million fishermen, 69 percent male and 31 percent female, reportedly participated in more than 1.3 billion days of fishing. They spent \$15.2 billion for fishing activities. They valued those fishing experiences, however, at \$154.5 billion, the Survey states.

In addition to information on fish and wildlife activities, the Survey also reports on recreational shooting such as trap and skeet. "While 16.2 million persons participated in some form of recreational shooting with firearms," the Survey states "22 percent of these were nonhunters and nonanglers, 26 percent were anglers, and 52 percent were hunters. In other words, 48 percent of those who shot firearms for recreation were not hunters."

WILD TURKEY FEDERATION DONATES MONEY FOR FILM. The Virginia Wild Turkey Federation recently donated \$1,000.00 to the Virginia Game Commission to begin production on a movie of the Wild Turkey in Virginia. "Photography will begin with the Spring Gobbler Season," said Game Commission Audio-Visual Supervisor Spike Knuth. The film will stress the history of the wild turkey. Almost extinct in Virginia at one time, it now exists in substantial numbers throughout most suitable ranges.

BY DUANE VALENTY

A science fiction story, some years ago, told how nations bred giant insects to unleash against enemy nations. The insects, out of control, took over the earth.

Fiction, of course. But the tale of the snail isn't. The latest news on the warfront in the age-old battle of man and this mollusk has decided overtones of the science fiction story.

The Giant African Snail has finally reached Florida in its awesome creep around the world. A lush area in North Miami is infested with the fist-sized creatures that are usually five to nine inches long and equipped with thousands of rasping teeth.

"They eat everything in sight, even the paint on houses," says a Miami resident. "I've killed 200,000 of them!"

Easily able to polish off a head of lettuce at one sitting, the huge snail chews flowers, leaves and cultivated crops in its hungry search for protein. And while the giant snail - *Achatina fulicas* - makes more news because of its size, its smaller relatives are also very much on the move globally.

One way or another, the snail is beating the jets in getting where it wants to go. It gets a ride to Florida from Cuba on the wings of a hurricane; it slipped - somehow - into Hawaii a few years ago from Asia and now is a monumental pest; it finds its way to America, though the U.S. Army has long worked in Europe and Asia to keep it out.

No invader in history has more going for it. If one doesn't make it, ten others of the prolific, hard-to-kill

breed do. Considering that there are 70 different known varieties of Mediterranean snails alone, many of which have a subtle resistance to extermination when they infest cargoes leaving the port of Leghorn, Italy, for the United States, some idea may be gained of the menace of this world-wide, unmitigated pest which causes this country at least several million dollars worth of damage each year, all of this without even making news.

Promoters introduced them first to Japan as a cure for everything from tuberculosis to kidney trouble.

"Buying meat and fish for your table is no longer necessary," one advertisement read. "Doctors are kept away and it brings smiles to the home."

Helped by a warm climate, they soon swarmed and spread. The story is told of a Yankee storekeeper on the small North Pacific island of Chichi Jima, who went to China to visit a sister and on the way heard that the big snails were good for curing consumption.

"He had the consumption - he was just like a skeleton when he left here, I know the guy," tells a Chichi

THE SNAIL THAT ATE

Appearing Everywhere



See the snail destroy an innocent head of lettuce **IN ONE SITTING!**

See this devious monster attack again and again with his **80,000 TEETH!**

See the snail slither into city and county, bringing its parasites into
YOUR NEIGHBORHOOD!

An AFROSNAIL Production

Rated: R (Revolting)

native. "So, he brought them here and was breeding them, and they got over the whole island."

Were they a cure for the man's consumption? Apparently not, since according to the story he soon died of it.

Sometimes growing to a foot in length and equipped with the prodigious count of 80,000 small teeth, with which it can even chop pieces of wood, the snail is a formidable destroyer.

"The snails advance in vast armies, that slither over the ground like slow-moving columns," described Dr. J. Gordon Clark. "Flame-throwers, bulldozers, steam-rollers, halt the columns only for a while. It established a beach-head in California, which it reached by stowing away in ships bringing war material back from the Far East."

A Honolulu garden in one night yielded 178 Giant African Snails - weighing a pound apiece and when held in the hand each "as heavy as an orange."

Underdeveloped nations have long suffered from a dread debilitating disease carried by worms known as *schistosomiasis*. The snail plays a part in its spread into human populations. When the eggs of the worm hatch in fresh water, the new worm "rows" through the water with tiny oarlike oilia, until it meets a snail which it burrows into and uses as a "biological amplifier" as it converts into many tadpole-type creatures.

Leaving the snail, the parasites swim into the water until they meet a human drinking or bathing, at which they shed their tails and penetrate past the skin and into the bloodstream where they mature, mate, and begin egg-laying. When eliminated in body wastes, some reach fresh water and the whole cycle begins again.

Where snails thrive, as in rice paddies and irrigation canals, the

carriers are on the increase and as world population zooms, according to experts, *schistosomiasis* also increased, and even now is said to affect 150 million people.

Snails have come alive after being frozen at minus 50 degrees. They have both male and female sex organs and are hermaphrodites. The shell, too, is a marvel in itself and was once used as currency by primitive people. Shells are all shapes, colors, patterns, and often collected for beauty, containers, and ornamentation. In 1854 in London, a single snail shell was sold for \$215; another for \$500.

The snail doesn't have to open his door to anyone. Sungly closed in, it can even supplement its defenses by thickening the edge or by a tooth-like thin film like a crab shell. He carries the door on his foot, which brings up the rear as it retreats into the shell, and the door automatically closes as the foot goes through.

Several devices help the snail breathe inside, such as a slit, a siphon-like tube, or a puncture. One type snail, the "wing foot," or *Pteropoda* bright in color, sometimes covers the sea for miles and is the main diet for fish and crustaceans.

The snail has appeared in art and literature for centuries and even today is the model for stained glass and ceramic pieces, while Donne, Bunyan, Wodehouse, Cerf, and many others have written of it.

Competing with man for food, man is the snail's first enemy though it has others, such as the ant with which it wages war. In some countries it destroys hides with tremendous loss, and everywhere it attacks food supplies, foliage and crops, and even mail. It's been called in the South Pacific "the real winner of the war."

Many chemicals have been tested for effectiveness in killing the eggs as well as the adult snails. Scientists

found long ago that copper sulphate kills snails but not their eggs and that mud somehow decomposes the effectiveness of the chemical. "Bayer 73," kills both snails and eggs but can't be stored more than a month. Sodium pentachlorophenate kills snails but fish as well.

However, species of "good" snails and "bad" snails have been successfully crossed and produced offspring. One scientist works with a genus of snail occurring in the Orient which comes in four species, one each in Formosa, Japan, China and the Philippines. The parasite carried by the Formosan species *does not infect humans*, although it is the same parasite that does infect humans when carried by other species.

"The other three species carry parasites that do infect humans," says this scientist. "The plan is to crossbreed the Formosan species with the other three in hope the hybrids that result will carry the harmless parasites. If so, it should then be possible to turn loose millions of Formosan snails in the other three countries to produce offspring not hazardous to humans and which, hopefully, would replace the harmful ones."

As food, the snail has long been considered a delicacy in many countries (lothesome in others!) and is a wide source of protein throughout the world. It is quite possible that it may loom as a most-important food source in years to come as populations increase.

Anything else *good* about it? In Florida they may serve a useful purpose as they do on such islands as Chichi where the islanders are convinced Giant African Snails forecast tropical storms.

"If you see these snails crawling up high, you got something coming," says a native. "They know it before the weather hits. If they crawl up very high, it's going to last for a while."

WHITE PERCH: DON'T SELL

By Gerald Almy

In one of those pleasant gabfests anglers are known to hold during midday breaks in the action, a local resident was bragging about the water at which we were gazing--popular Lake Gaston. Having enjoyed excellent fishing on the lake over half-a-dozen years, I wasn't inclined to challenge his assertions. Stripers he talked about--15 and 20 pounders, and my head bobbed agreeably. Bass he had taken and lost were recounted, including a tale of a pot-gutted 10 pounder vanquished with a "lime" worm. Easy to believe at Gaston.

But I winced inwardly when he mentioned white perch. I didn't challenge him outwardly, but surely, I thought to myself, he must mean white bass. What would white perch be doing in Lake Gaston? Two months later on a May expedition to Gaston, I was forced to swallow my doubts.

Mickey Johnson stirred his ancient wooden flat-bottom cautiously around the point jutting in front of his house trailer and we sliced smoothly through the eerie pea-soup fog in quest of a favored bass hole. Only years of experience on the lake and careful hugging of the shoreline allowed us to reach our destination a half hour later. The trip is usually a 10 minute haul.

Even the few bass boats out were purring like cats instead of zooming raucously across the lake. It seemed a perfect morning to catch a hump-backed lunker still mean with the night's feeding on his mind. Maybe even a heavy-shouldered striper would tear into our minnows and lurch with a reel-smoking run across the wide lake waters.

Such was not to be. One small striper inhaled Mickey's minnow and fought valiantly before being released. A largemouth of 13 inches took my minnow next and did a wild dance in the morning mist. He too was returned to put on weight over the coming summer months.

Then came the blitz. A sharp tapping bowed Mickey's rod with visible electricity. At first, it appeared to be a landlocked striper bite. But the fish didn't dash with the abandon of a pin-stripe, though he bucked stubbornly against the spincast outfit. Just when Mickey identified the fish as a white perch as it rolled on the surface, I felt my rod tip, bounce and set the hook into another fish. I watched curiously as Mickey slid the net under the shiny silver fish, and it was indeed a husky white perch. By now I'd pumped my fish to the top and was greeted with the water-thrashing of a second slab-sided perch.

True bass addicts may have cursed these unlikely fish for bothering them while they sought bigmouths. Both of us were elated with the catch. Mickey's fish was 1¼

pounds, while mine just topped the pound mark by an ounce or two. Both qualified for citations from the Commission of Game and Inland Fisheries, but we weren't thinking of citations at the moment. Our only concern was to get the lines back in the water. We knew perch were schooling fish and hoped there might be more in the vicinity.

There were. Within minutes we each had another perch on. Soon I hooked into my third fish while Mickey mumbled incoherently about another one mouthing his bait. As I worked my fish in, a truly incredible sight greeted our eyes. Nipping and jabbing at the pound-and-a-quarter perch was a striper well over a yard long!

The perch was at the surface and the striper's dorsal momentarily broke water as he dove at the panic-stricken fish. For a lark, I tried to let the striper suck in the small fish I was fighting, but he refused--perhaps spotting our movement in the boat.

Neither would he take a shiner or a jig when we cast down into the depths for him. But three more citation-sized white perch did wallop our baits before the morning sun broke through the wafting mist on the lake. The school moved out as rapidly as it had come, and we headed in to shore for a late breakfast of eggs, bacon, pancakes and coffee.

Regrettably, no other perch came during the remainder of that 3-day trip. Mickey has since reported several similar blitzes of perch, however, all fish running from ¾ to 1-1/2 pounds. Where these fish go at other times, we've been unable to determine. An angler with a good sensitive depth-finder might have better luck solving this mystery.

The white perch is one of only a few gamefish found in fresh, tidal and salt water. Catching the fish in lakes is not particularly common in Virginia, though in some New England states it is a very popular form of angling. Last year in the Old Dominion, citation perch were recorded at Back Bay, Lake Meade, Lake Taylor, Chickahominy Lake, Western Branch, and the Mattaponi, Northwest, Pierces, Nottoway and Rappahannock rivers. A total of 22 fish over one pound were registered for citations, though doubtless more pound-plus fish were creeled.

Most white perch fishing in Virginia is done in the Chesapeake Bay and feeder streams and rivers. The fishing in the Bay and lower stretches of rivers holds up well from late spring through fall. Most tidal rivers see healthy runs of perch beginning in March and extending through April into early May.

THEM SHORT!

The Rappahannock is a popular perch spot which draws anglers from long distances in quest of the delectable scrappers. The Route 1 bridge is the focal point for anglers who line the banks upstream and down in often phenomenal numbers.

Bloodworms are without question the favorite bait for this river fishing, though some anglers use regular earthworms with good results. Bottom rigs with a ¼ to 1-ounce sinker and No. 6-8 hooks on spreader leaders are employed. Other anglers prefer to cast artificials, which offers the possibility of early-migrating hickory shad and stray crappies. Herring are also hooked on the small shad darts and spoons that score on white perch. A slow, bottom-bumping retrieve generally proves most productive. Occasional twitches may be necessary, depending upon the mood of the perch on that particular day.

Fishing for perch in the Chesapeake Bay is also quite popular, especially late in the spring and during the summer and fall, after the fish have spawned. Clam snouts vie with bloodworms as the top bait. The perch will be found in depths from 2 to 30 feet or deeper.

When perch are hanging around shallow rocky areas, some fast fly rod sport awaits the adventuresome angler. I prefer a rather stout rod for this fishing, since the Bay can get windy at times, to say the least. A graphite rod of 8½ feet is my current choice for perch, combined with 7 or 8 WF line. This is heavier than you need to fight the small perch, but when breezes kick up, the long stiff rod offers a distinct advantage.

Perch aren't particularly pattern-conscious as far as flies go. I've had good luck simply making up some colorful bucktails and streamers, with a little lead wrapped around the shank of the hook under the body for sinking weight. Worked with sharp 8 to 10-inch pulls of the stripping-hand, the flies drive the perch batty. They sock the flies with vigor and fight with surprising strength against the long rod.

The fish caught in tidal rivers and the Bay rarely average better than half-a-pound. But in adequate numbers, they provide table fare difficult to match. Bob Gooch, outdoor writer from Troy, Virginia, says the white perch is "the cleanest fish that swims." Judging by the taste of their firm, flavorful flesh, most anglers would concur.

The white perch is a fish for all anglers--thriving in fresh, brackish, and salt water, responding heartily to lures, bait and flies. But if you ever figure out where those schools of one-pounders at Lake Gaston spend most of their time, let me know!

MARCH, 1978



BACKPACKING



TEXT AND PHOTOS BY KAREN GREEN

From the East and the West Coasts, from the hustle of Manhattan and the leisure of a Southern California beach town, leaving behind the theatre script of an actress and the recreation program of a college professor, we met as planned in Luray, Virginia, one early spring evening to equally distribute our food and equipment for a four-day Appalachian Trail backpack trip. As different as we were, six women of varied personal and professional backgrounds, ranging in age from early twenties to mid-fifties, including one mother and daughter team—we shared one very important quality: a love of the outdoors.

Eight months prior to this evening, I had asked my close friend, nationally renowned outdoor sports-woman Sheila Link, if she would be interested in an extended backpack trip. She readily agreed and took the reins to handle the logistics. Our two-man backpack trip grew to four (her daughter Teresa Link, and

fellow outdoor writer Maggie Nichols) and soon, six (camping expert Katie McMullen, and outdoor recreation instructor Marcia Carlson), as others heard of our prospective adventure through Shenandoah National Park.

For the specifics, Sheila contacted the Potomac Appalachian Trail Club in Washington, D.C. Carefully reading their trail guidebook and maps for availability of fresh drinking water, car and road access for drop-off and pick-up, and scenic highlights, Sheila plotted out the details of our hike, keeping in mind daily mileage and nightly campsites. She next wrote to the park superintendent for the necessary wilderness trail permits.

To further organize our trek, Sheila outlined an equipment and clothing list for each of us, which included shelter (which my partner was bringing for us), bedding (sleeping bag, ground cover, foam mattress), cooking and eating utensils (stove, pots and pans, pot-holder, spatula, tongs, fire starter, plate, Sierra cup, silverware, detergent, paper towels, aluminum foil, candle, fuel for stove), personal (toothbrush, and paste, soap, lipstick, medication, brush, towel), clothing (extra socks, scarf, poncho, down jacket, extra underwear, extra shirt, in addition to the jeans, shirt, socks and hiking boots we'd be wearing), and miscellaneous (stuff sack, flashlight, camera and



Sheila Link points out unusual greenery to her daughter (left) Maggie Nichols checking the Appalachian Trail sign board. (right)



THE SKYLINE

film, notebook and pen, insect repellent, suntan lotion, foot powder, canteen, first aid kit, fishing gear, safety pins, cord, and moleskin).

As an outdoor writer specializing in camp cooking, I offered to arrange our total food supply. Having previously field-tested Mountain House/Oregon Freeze Dried Foods, I'd found their products tasty, nutritious, and lightweight, and contacted them to work with us on our menus. We dined on such wilderness delicacies as rib eye steak for dinner, chicken salad for lunch, and scrambled eggs with bacon for breakfast. All-day snacks of Lurps (fruit, nuts, and candy mix), freeze-dried ice cream, and sausage sticks were added to keep our energy level high.

On the morning of Day 1, I adjusted my backpack with its 40 plus pounds (more than I should have carried, I later realized, considering my body weight of 103 pounds), trying to make it as comfortable as possible on my shoulders. By one in the afternoon, we had made the car drop-off at our destination and started hiking on the Skyline Ridge, near Big Meadows, Byrd Visitor Center. For the next five hours we kept up a moderate pace with a lot of uphill climbing. Sheila showed us her method of lifting her pack high on her back with her hands when climbing up these hills in order to better balance the weight and make walking easier.

Around six in the evening we set up camp near Hawksbill Gap. Quickly, we prepared, ate, and cleaned up our first night's dinner. To protect our supplies against ravaging raccoons, we tied up our backpacks with cord in some nearby trees. Tired from the day's excitement and exercises, we climbed into our two-man tents for a good night's sleep.

While I was lying quietly in my sleeping bag in a state of semi-sleep, I heard heavy footsteps. Soon, more forceful steps ... heavier ... closer. I was fully awake when I suddenly heard slapping and tearing noises. I sat up, fearful of whom or what was in camp, and bravely shouted, "You get out of here. Now, you get out of here and leave us alone." In a nearby tent, Sheila awoke, thinking I was dreaming, and called to me, "Karen, you go back to sleep." As I heard the heavy breathing becoming louder and closer, I looked outside my tent. Shocked at what I saw, I screamed. "Sheila, it's a bear!" Within a few feet of me, a dark black, 300 plus pound bear stood swinging at the packs. Sheila grabbed a rock and hit him in the chest. He dropped down a few inches from me and we looked at each other, eye-to-eye. Not frightened off by this attack, he stood up, reached about eight feet into the air for another backpack and tore into its food supply. As if thumbing his nose at us, he sat nonchalantly a few yards away dining in content

on our freeze-dried foods. A few feet behind the eating animal, I spotted a pair of green eyes--another bear was ready to join the feast. Bears of this type, though they appear shy and "cool," were, we knew, dangerous because they have no fear of human beings. They have learned to live with society and scavenge for their food.

We grabbed our pots and pans and began banging, hoping to scare the two bears away while we prepared to break up camp. Hearing our clanking and screaming, three young men—Daniel Boone, Robert Politi, and Scott Steiner—who were camping in a nearby shelter, climbed up the trail to assist us. Within ten minutes we gathered as much of our belongings as we could carry and speedily climbed down the hill in darkness. The first rule on the sign posted outside this shelter stated, "Overnight camping in or within sight of this shelter is prohibited." But, the last added, "During times of storm, back-country campers may seek overnight shelter here if otherwise unable to maintain a safe camp." We agreed that bears in camp were an emergency, inhibiting us from maintaining safe conditions.

Since we now knew that tying our packs in the trees would not inhibit the bears, we loaded them in a nearby latrine and secured the door tightly with cord.

Settled in the shelter with a campfire for protection, Sheila angrily spoke of our situation. She objected to the rules, which allowed people to go in to hike but did not allow them to protect themselves. "To not allow a fire in camp is tunnel vision in bear country. If a bear had run into camp, all we would had to do is pick up a burning stick."

Camp cook Karen Green (right) prepares breakfast while Teresa Link and Marcia Carlson refresh themselves.





Teresa Link looks at the valley below.

"It was terrifying!" exclaimed Maggie. "He was inches away from the tent net. I just wanted to get out of that sleeping bag and do something."

Sharing her inner feelings, Teresa expressed that although it was an exciting experience, she was glad it was over. "Before this, I always thought if a bear came into camp I'd just sit in the tent and wait until he left. Now, I saw that he, instead, sat and wouldn't leave. I'm not as cocky about it. I'm just glad we left. And it was heaven to hear the three voices coming through the trees to help us ward off those bears. Funny, we were saved by Daniel Boone and friends."

We spent a lazy morning around camp, cooking breakfast and jamming about the night's activities. We climbed the trail to our original campsite to collect what we had hurriedly left behind. Katie and Marcia's tent was collapsed with a huge bear's dirty paw print on top. "I'm glad I wasn't in the tent at the time he broke it," Katie emphasized. Marcia picked up our plastic water jug and spotted holes, made by the bear's teeth.

By noon we were again on the trail. We hiked 7¼ miles to Shaver's Hollow Shelter, a log shelter nestled

in thick woods on a small ridge. I had enjoyed the afternoon's trail, colored with more lovely wildflowers and luscious greenery, but was relieved to be under shelter resting my aching calves.

Once again, we tied our food in the latrine and split into two-man watches. Maggie and I carefully stared at the fire and into the trees; we knew we'd heard bears in the area. Sheila and Teresa also heard bears during their watch—so they kept the blaze burning intensely.

At breakfast, Day 3, Maggie and Katie suggested we slow our pace somewhat. This was easily arranged, since we had to cover only half the distance of the previous day's hike to get to our shelter for that night. After conscientiously cleaning up camp we set out for the trail, planning to be at the shelter by mid-afternoon. Because this was the first day of a holiday weekend, we encountered considerably more people on the hike than the previous days. As we passed fellow backpackers, we shared our stories of bears in camp and offered safety suggestions.

In about 3½ miles we reached Byrd's Nest Shelter, our hiking goal for the day. Our plan was to enjoy the afternoon and evening in camp, and, the morning of Day 4, to hike out of the trail, pick up the cars, and meet at the Panorama Restaurant in Thornton Gap for breakfast. This was accomplished with lots of enthusiasm, but fortunately, no further interruption by the bears.

A backpack trip such as ours offered more than just a wildlife vacation. The six of us shared adventure, exercise, companionship, excitement, relaxation and laughter. Through those four days of backpacking on the Appalachian Trail, we strengthened our bonds of friendship.

Teresa Link amid Appalachian Trail greenery.





AN UNCOMMON OPENING DAY

BY R. F. SHANKS

The climb out from the wild mountain stream was a pleasure. Walking silently with the cold April wind in our faces, we felt an inner sense of happiness and accomplishment for where we had been and for what we had experienced. With the fine companionship and with the streamside lunch consisting of baked potatoes, bread, a touch of wine, and freshly caught native brook trout, it had indeed been a very nice and uncommon opening day.

We awoke early that Saturday morning because we wanted to be in the stream by noon. After a hot breakfast the three of us and Zeke, my dog, loaded up in the car and headed for a back-country stream in Shenandoah National Park. It was the opening day of trout season in Virginia and this year we planned to fish for native brook trout and avoid the crowds that would be clustered near my favorite stocked stream. It was early spring and water in that cold mountain stream would be relatively high and thus easier to fish. We hoped to catch those natives that had eluded us during the low water periods of the summer and fall months.

After about an hour and a half drive we arrived at our destination on the beautiful Skyline Drive. From the car it would be about an hour's hike down to the stream that we knew held native brook trout.

Dawn, my wife, was in charge of Zeke and was also interested in doing some early spring sketching of the woodlands. After an easy hike down the mountain in which we were surprised by two deer, we found along the trail a shelter, and we noticed that a couple of backpackers were in the vicinity. "Mighty cold last night to be sleeping out," I thought as I walked past the shelter.

My first cast brought a swirl from under a rock as I hooked into a small native. After a brief struggle the little fish came to rest at my feet. Gently I unhooked and released the trout back to the creek. "too small," I thought. Down below this pool the water grew flat. Casting the Royal Coachman across the stream, I felt the strike of a nice native brook trout. Leaving the water once, the 11-incher left the water and made a hard run upstream, and then finally submitted to the pressure of the rod. I creeled him and wondered where my partner had gone. Later, I caught up with Mark and saw that he was having good luck also. He had hooked

and released maybe a dozen small natives, and had kept three nice trout. I later picked one up on the way up the trail.

Between us, we had five brookies in the 10 and 11-inch class. Meanwhile, Dawn was back at the shelter and had stuck three potatoes wrapped in foil in the fire that the two back-packers were using. We placed our cleaned trout along with some butter, salt, and pepper in the foil, and placed each wrapped fish on the coals. From Dawn's pack we got the goatskin which had just enough wine to wash our lunch down.

Talking to the backpackers, we asked how long they had been on the trail. "About a week in all," they said. "Have to go back to Richmond tomorrow. We've been eating freeze dried food all week and have saved the best food we have for last."

"What is that?" I asked.

"Tube steak!" one exclaimed. As I wondered what he meant, he then said, "Better known as hot dogs. We have been wanting real food for so long. Today we are going to splurge." About that time I looked around and asked Dawn, "Where is Zeke?"

"Oh, no!" Mark yelled, as we saw Zeke consuming the last "tube steak" from the hungry backpacker's plate which had been resting on a rock near the fire.

Feeling as if Zeke had just stolen a condemned man's last meal, we decided to share our streamside meal with our backpacking friends. After finishing our tasty lunch, we said so long to our new friends.

Fortunately, Virginia is endowed with several mountain streams that tumble down out of the Blue Ridge and the Alleghanies. The headwaters of many of these streams hold a sizable population of small native brook trout. A creek that holds brookies is within a half day drive of anyone living in Virginia. Using topographical maps one can locate a likely stream or better yet, one should talk to people familiar to a particular area. There is a good bet that you can find native trout fishing. Your search should, of course, take place before opening day in order that you will have a sure-fire spot to catch fish on that first April Saturday.

Be prepared to have to walk to find these wary creatures because they live in places that are still relatively wild. This, however, is what makes the sport fun and challenging. The air is clean and the wind beckons you into the forest to share the freshness that makes all that go there feel very much alive.

EAGLES UP

The latest aerial survey of nests in the Chesapeake Bay area has revealed that 1977 has been the best year in recent times for bald eagles.

The survey team found 79 active nests in the three-state area and rechecked 77 of them to discover that in 44 of the nests young were successfully hatched, with a total of 69 eaglets.

Thirty-seven of the young were banded by the survey team, including one foster fledgling incubated and hatched by a pair of eagles at Mason Neck National Wildlife Refuge, Fairfax County, Virginia.

TACKLE BOX TIPS



Rubber bands, which come free with the morning newspaper or sell by the dozens for a dime at a variety store, are a valuable aid to a fisherman.

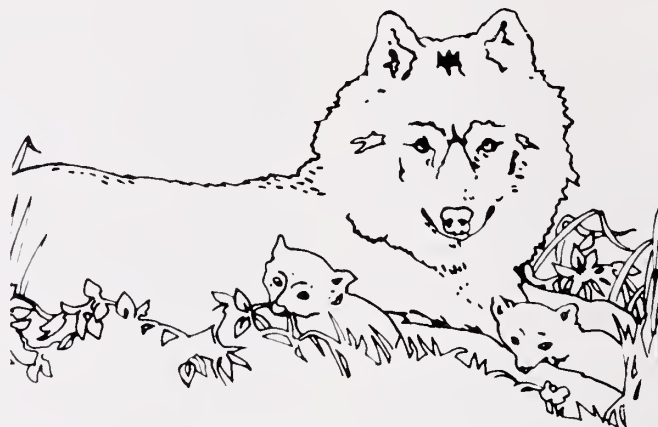
A piece of one, sealed in a split shot before crimping, will stop the shot from wandering down the line.

Knotted above a hook and slid down on the eye, colored rubber bands lend allure to bait and even draw strikes to a bare hook.

A rubber band, tied in a simple overhand knot and then one of the remaining loops fixed around a spinning reel, keeps line from unwinding.

Courtesy UMCO Corp.

Book Review:



THE CULT OF THE WILD, by Boyce Rensberger. *Doubleday & Company*, \$7.95; 280pp., *illus.*

The Cult of the Wild is an engaging new book that lays many wildlife misconceptions to rest. Praised as "a rarity...the science writer whose writing is as good as his expertise," Rensberger surveys the behavioral patterns of some of our most familiar animals -- lions, wolves, gorillas, elephants, sharks, baboons, hyenas, bears, crocodiles, whales and dolphins -- with fascinating results. For example: Wolves are monogamous, and are so dedicated to their young that they will disgorge predigested meat for their pups, even in times of famine. Hyenas, long thought to be scavengers, hunt in co-ordinated groups. A clan will pursue its prey only as far as the limits of its own territory; like county sheriffs, one clan will stop at the border of another clan's area.

A wide-ranging book, *The Cult of the Wild* has important implications in our efforts toward conservation. "The time has come," Rensberger writes, "to put away our animal myths and immature conceptions of what the earth really is." Man must view himself as an integral part of nature. Our intellect does not place us "above" the animal kingdom (there is evidence of cultural differences among elephants and among baboons). Nor does our self-aggressive tendency single us out as "less worthy" (lions and other animals have also been known to murder their own kind). Rather, we must view ourselves realistically, as participants in an ever-evolving animal world.

COPPERHEAD CAPER

Dear Virginia Wildlife:

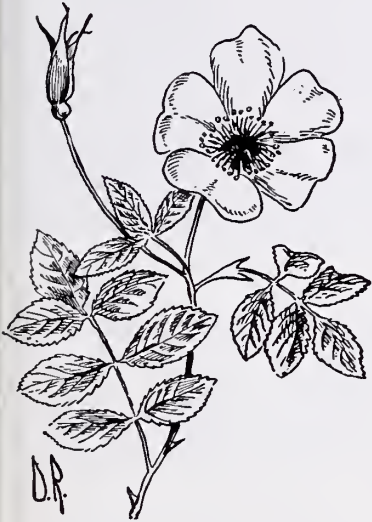
One Sunday I was fishing the James River by the Nickel Bridge with yellow and black Panther Martins without much success so I switched to a red and white daredevil. On my first cast, I got a strike.

The response of the lure and rod weren't familiar once I started to retrieve, but I was sure there was something on because it wasn't dead weight. Once I got the lure within sighting distance, I saw that I had snagged a copperhead midsection. (It wasn't a water snake as far as I could tell.) If ever I've seen a citation copperhead (or water snake), this was it. I'm sure it was a good 40" long and went a good pound-and-a-half. I tried to get some nearby sunbathers to witness it, but they wouldn't come near me, and I sure wasn't going to bring it in for a weighing, so in the interest of sportsmanship, I cut my line. I know you usually don't take the fisherman's word for 'the one that got away,' but surely this is an exception. I caught it on No. 2 test with a Wright-McGill 7' spinning rod and a Mitchell 300 reel. If you'd like, I'd be happy to show you the cast technique I used.

Ronald Tobias Bean
Richmond

VIRGINIA WILDLIFE

WILDFLOWER WALK



The Science Museum Association of Roanoke Valley announces the 9th Annual Spring Wildflower Pilgrimage to be held in the Roanoke Area on April 28, 29 & 30, 1978. The Pilgrimage includes lectures, wildflower walks, bird walks, and an art show. Keynote speaker will be the noted wildflower artist, Anne Ophelia Dowden. Her topic will be "The Making of Beautiful Books."

For further information, call (703) 563-2891, or write: The Science Museum Association of Roanoke Valley, 2323 Overlook Road, N. E., Roanoke, Va. 24012.

Had an outdoor adventure lately? If you have, write to Wildlife Kaleidoscope and tell your story. Send us your photos too!

STAY COOL WHEN THE SNAKE STRIKES

Rapidly cooling the venom from a poisonous snake bite effectively inactivates the poison and allows time for the victim to be rushed to proper medical treatment before the venom has a chance to spread and do irreparable damage.

"Snakebite Freeze," from Amerex Laboratories, is a first aid kit that contains two "Fast Freeze" instant cold packs ideally suited to treating a snake bite. The durable, weatherproof plastic carrying case contains two Fast Freeze packets, two latex constriction bands to help slow the spread of venom, (bands are tied around the wound on each side), and a neoprene wrap to insulate and hold the cold pack in place as the victim is transported. An easy to follow instruction sheet is also packed in the kit.

The kit is available for \$10.98 from Amerex Laboratories, Inc., P. O. Box 32827, San Antonio, Texas

FAWNS AND MOTHER LIKE PEOPLE



Dear Virginia Wildlife:

We thought you would like an interesting picture that you don't often see. Margaret Page and Roy Patterson hold twin fawns that Ray's father found while cutting hay on his rented farm.

We freed the deer and patiently waited for the mother to come back and take them away. It didn't take long before she made her appearance and took them back in the woods with her.

Ray Patterson
Charlottesville

A BITTER PILL

The Interior Department's U.S. Fish and Wildlife Service researchers have developed a bird repellent for use on sweet cherry crops that allows growers to raise



cherries successfully and have birds in their orchards, too. (Damage in some orchards is presently kept in check by scaring methods--gunfire, gas-powered exploders, use of shell crackers, broadcasting recorded distress and alarm calls of birds, or by trapping if starlings are causing the damage.) If its use is registered with the Environmental Protection Agency, and scientists think it will be, it would be the first time a chemical has been approved for protection of fruit from bird damage. Its use on other crops also looks promising.

The chemical, methiocarb, is a short-lived carbamate that breaks down rapidly in sunlight. The compound is a potent emetic, and when birds eat a few cherries they soon learn to associate its taste with its effect. The effect is temporary, however, and birds recover completely.

THE RIGHT ARMS TO BEAR

By BEN HILLMAN

How often have you heard the questions: What is the best gun for this or what sort of equipment should I buy for that, *ad infinitum*? Well, the answers to these questions are very complex depending upon what you hunt, your budget and where your priorities lie. Numerous hours have been spent around the mythical cracker barrel discussing the pros and cons. What I shall attempt is to approach these problems with the average Virginia sportsman in mind and try to find the answers. Bear in mind that these conclusions have to be prejudiced but that prejudice is influenced by about 20 years' experience.

A good place to start is with the rudimentary or basic tools needed to do the job. Actually, about ninety percent of Virginia's game can be taken with only two guns: a vent-ribbed pump 12 gauge shotgun bored modified and a twenty-two semi-automatic rifle with four power telescopic sight. With the pump shotgun you would have sufficient firepower and flexibility to take big game, birds and small game. Modified is the recognized compromise choke for all around hunting and 28 inches would be a good choice in barrel lengths. The rib would help in aiming and be a plus if a round of either skeet or trap were in the offing. It would also increase the resale value of the gun.

With economy in mind, a handloader can save a pile of money stuffing a 12 and a pump doesn't throw shells. Most pumps are reasonably priced and 12 gauge loaded ammunition and handloading components are available in quantity wherever these items are sold. If the recoil is excessive or power unnecessary, it is possible to load a 12 down but there is no way you can load a 16 or 20 up.

Most of Virginia's big game is taken at short range so the shotgun is no real handicap, and, where legal, that range can be extended through the use of 12 gauge rifled slugs. Based upon ballistics and personal experience, my opinion is that slugs of the lesser gauges are inadequate for Virginia whitetails and black bear. They just don't have the oomph needed to do the job.

The twenty-two semi-automatic would primarily be used to take small game such as squirrels, rabbits and groundhogs. The telescopic sights are an absolute essential for accurate shooting when in the field after either whistlepigs or bushytails.

These guns or some minor variation thereof are what I consider basic. Beyond this point you get into important money when guns are added. The next logical addition would be a scoped bolt action centerfire rifle in the all around category. A 243, 6mm or 25-06, perhaps, topped with a variable scope in the medium power range would be a logical selection. This three-gun combination makes a good battery for Virginia, especially if your main emphasis is to be on varmints and not deer. It also is a good choice if you are a careful shot, because any of the three aforementioned calibers will down deer or bear with well placed hits.

For the died-in-the-wool big game hunter a scoped 270 or 30-06 would be more in order. These two cartridges have more knockdown power and give a certain amount of assurance on any shot taken at big game. One can still hunt whistlepigs with a 270 or 30-06. Both lend themselves to varmint hunting with selected loads. If you are a handloader, by all means get a bolt action, though, because its strength and design go a long way toward simplifying any case stretching, feeding or safety problems that may crop up.

Practically any action will do if you do not handload. I do not believe the inherent accuracy of a good pump or semi-automatic to be inferior to that of a bolt action of equal quality, even with handloads. The increased rate of fire might even be a plus factor in the woods in the hands of a seasoned hunter. The bolt action man is generally an accuracy nut, anyway, and usually all he wants or needs is that first shot.

There are specialists in the shooting fraternity and like everything else specializing costs money. A duck gun, skeet gun or varmint rig *per se* will be expensive. One pays his money and takes his or her choice.

What guns would I select, given an average amount of money? I would probably pick a 12 gauge pump, a twenty-two semi-automatic and a bolt 6mm Remington because I am more varmint hunter than deer hunter. I also handload. But given more money I would buy a lever action 35 Remington for deer and a 22-150 for varmints.

It would be wise to remember, however, that there is no all around weapon. All leave a little something to be desired so be ready to compromise unless you're willing to spend more money on sophistication.

In Virginia we have an adequate supply of land on which to hunt and abundant opportunity for outdoor recreation. There never were more rifle, pistol, skeet and trap ranges. Although this situation complicates somewhat the selection of suitable equipment, the opportunity is at least there. That's something that a number of other countries and even some other states in the United States can't boast about. Make your selection and get to it. You will be joining the ranks of many fine sportsmen and following a tradition as old as the nation. Good Shooting!



RECIPES FOR MAKIN' MUSKIES

By Carl 'Spike' Knuth
(Technical Assistance By Joe Gray)

It was a sunny, crisp--but warming spring day. Through naked trees I could see rippled, dark blue water. Parked on a small service road leading to the concession stand on Northern Virginia's Burke Lake, were a number of vehicles sporting the familiar Virginia Game Commission Shield.

Fish Division Culturists and Biologists had come to this 218 acre lake located in Fairfax County on a special mission and I had come to record it on film. As I unloaded my camera gear, I was greeted by Joe Gray, Fish Cultural Supervisor of Warmwater Hatcheries. He and his crew had been standing by, waiting for me. The object of our gathering was *Esox Masquinongy*, more commonly known as the Muskellunge.

While I was preparing for filming, Joe filled me in on some past history concerning the musky program. Since its initial introduction into Virginia waters in 1963, the 'Musky' has taken readily to numerous rivers and lakes including Lake Burke. Since that time, the rod and reel record has climbed steadily each year indicating the musky is growing well in Virginia waters. In February of 1977, Ernie Addington of Gate City landed a 36 pound 8 ounce beauty out of the Clinch River. Smith Mountain Lake has been a consistent producer of big fish.

Over the past 12 years, two basic methods, and variations of the two, have been utilized by Fish Division Culturists in their attempts to produce adequate num-

bers of musky fry for stocking. During the beginning stages of the Virginia Musky program, eggs and fry were obtained from neighboring state agencies in Tennessee, West Virginia, and Pennsylvania. Hoping to build up our own stocking capabilities, Fish Division personnel began retaining a number of selected specimens at the Hatcheries each year for the purpose of rearing them to spawning age. When they reached spawning age, an attempt was made to collect eggs and raise them to fingerling stage.

The second technique consisted of releasing a small number of males and females in a series of nurse ponds and allowing the specimens to reproduce naturally. Culturists and Biologists felt that with further experience and improvement, this technique appeared to have more merit than attempting to collect eggs from the Hatchery resident brood populations.

Beginning in 1974, Gray and his crew were hopeful of an accelerated production program. Both techniques were to be used, but with modifications and improvements. They now knew, for example, that several small and large impoundments contained eligible spawning populations of wild fish that could be utilized for egg-taking.

The Commission's musky propagation program really gets started in February at the Buller Hatchery near Thomas Bridge, according to Gray. Buller is nestled in the beautiful mountains of Smyth County



The Game Commission's musky progagation program began at the Buller Hatchery in the mountains of Smythe County.

in Southwestern Virginia. It draws its supply of clear, cold water from the South Fork Holston River. Brood stock is kept year around in two five-acre brood, or holding ponds, where they prosper on a diet of forage fish that are hatched in the ponds.

With the arrival of warming temperatures - usually in early March - the brood ponds are lowered and the adult fish netted, anesthetized and examined for condition. When water temperatures have been maintaining a temperature of 50 degrees F, the fish are generally nearing spawning time. The ripe, spawn-laden fish are then transported to a selected number of rearing or nurse ponds. The ponds are stocked with varying ratios of males to females, but generally favoring the males in numbers to assure fertilization.

In about a week to 10 days later, the smaller males begin to accompany the females as they cruise the shoreline areas to spawn. In another three weeks, free-swimming fry begin to gather near the spillway where they are netted. Gray and Hatchery Manager Odell Whisman found that the ponds with heavy grass or weed cover were more successful since they gave more protection to the eggs and gave the newly hatched fry something to attach to until their yolk sac was used up and they were capable of swimming free. For this reason the ponds are emptied throughout the summer and allowed to grow up in grass and other terrestrial vegetation prior to being filled for the spawning season.

The fry are collected and removed by means of fine-meshed dip-nets, and transferred to rearing

troughs where they are fed domestic zoo-plankton, which are minute aquatic animals also reared at the hatchery. Nurse ponds are then drawn down and adult muskies are removed and returned to the freshened brood ponds. The fry grow rapidly and soon are eating small minnows as they begin to reach fingerling and stocking size.

The trap nets had been left undisturbed throughout the night. Gray and some of his crew had 'peeked' a little earlier and had discovered fish in a few of them, so we headed for those first. Gray manuevered his Jon Boat to a position where Whisman could grab the anchored end of the net some 30 yards out. Whisman lifted the net which was then alternately lifted and compressed, accordion-like, as the boat moved very slowly shoreward. Soon the trap-net was almost totally compressed near shore, revealing three adult muskies and a large assortment of panfish - most crappies. the muskies were removed with a large landing net and placed in a large tub in the Jon Boat. A tiny drop of Quinaldine - an anesthetic- put into the water calmed them for their trip to shore. When all six nets were processed, a total of 11 muskies ranging in size from the smallest male at seven pounds to the largest female at about 20 pounds, were transferred to a live box made of netting close to shore.

Gray and his crew quickly constructed a make-shift tent of blankets and canvas which would protect the eggs from direct sunlight as they were stripped from burgeoning females. One of the Jon Boats was washed



Fish like these are the results of the biologist's hard work.

out and filled with fresh lake water and a large tub was filled as well. The fish were removed from the make-shift holding 'tank' with a large landing net and walked ashore--males to the waterfilled Jon Boat; females to the tub. Again they were anesthetized, not only to protect the fish from injury but the personnel as well. The muskie's mouthfull of razor-sharp teeth is to be respected, for it can cause some serious and uncomfortable damage to the hands and fingers.

By now, a crowd had begun to gather. There seemed to be two basic reactions by the spectators who had gathered. Those who were among the many who seriously fished Burke Lake - which is probably the heaviest fished lake in the Old Dominion - looked longingly and knowingly at the big fish. They knew of the existence of these toothy-tigers of fresh water. Maybe they had tangled with them one summer morning while casting a big spinner-Bucktail combo. The other reaction was one of amazement--sometimes utter disbelief--that fish of this size were cruising Burke's tree-rimmed waters, which resembled the prime musky waters of Northern Wisconsin and Minnesota.

The men continued their work. While a small, plastic dish pan was being washed out with lake water, a female muskellunge was chosen--wiped free of moisture with a gunny sack--and handed into the lean-to tent to Joe Gray. He carefully and gently began a stroking motion toward the tail, with some pressure to the fish's belly until thousands of tiny eggs began streaming into the pan. Meanwhile, the male is under-

going a similar procedure. After being wiped dry, sperm (milt), is collected from the male with a small plastic spoon. The males produce only a few drops of sperm, but each drop is apparently enough to fertilize thousands of eggs.

Following the stripping of eggs and sperm, the pan is gently rolled to mix the sperm with the eggs. A small amount of water is then added to the mixture for about three minutes, then decanted off. Fresh lake water is gently added; swirled; and allowed to set for five minutes until the eggs were free of adhesiveness and hardened. The eggs were measured to determine the number of quarts and then poured carefully into water-filled plastic bags, placed in styro-foam boxes and transported to the Front Royal Hatchery.

The sun was beginning its plunge in the western sky as Gray and his crew completed their egg-taking. The adult fish were weighed, measured and fin-clipped for future reference, then returned to their live box until they were fully recovered and released at dusk. Gray explained that the eggs would be put in special hatching jars where they would be kept in thermostatically controlled, circulating water. In about two or three weeks, the eggs hatch, which will add to the stock of musky fry already hatched in the Buller Hatchery.

The resultant fry are raised to stocking size--which is three inches or more, then stocked in suitable Virginia lakes to provide Anglers with yet another trophy fish. Don't be surprised if a 50 pounder comes out of Smith Mountain Lake in the near future!

THE THIN GREEN LINE

WARDENS
HAVE A KEY ROLE
IN HUNTING EDUCATION

BY DAVID E. SAMUEL



The Game Warden has long been “Mr. Game and Fish” to most of the public. He talks to hunters, school children, landowners, clubs, merchants and a general cross-section of our society. This broad contact gives him better access to the “general public” than is achieved through publications, exhibits, films and other educational efforts which are often directed at more specific audiences. He may, in fact, be in a unique position to mediate the growing squabble between hunters and non-hunters.

In recent years the antihunting movement has gained much public support and press. The mere presence of this controversy has a deeper meaning to wildlife and wildlife management than just the threat to sport hunting.

Many who oppose hunting do so with little knowledge of such things as death as a natural phenomenon, the ecology of the wildlife species they wish to protect, the longevity of wildlife, the cost of management for game and nongame, who pays the bills for this management, how we preserve rare and endangered species, etc. On the other hand many hunters also have little knowledge of the same concepts. Also hunters fail to understand the views of those against the sport. Some hunters don't even realize that most conservation monies in this country come from their own license revenues.

It is obvious that both sides could benefit from an objective exchange, but this has not been forthcoming. Both sides must realize that people who object to hunting are not necessarily hypocrites and people who hunt are not necessarily villains. The Game Warden, during his day-to-day dealings with the general public, hunters

and nonhunters, is in a key position to assist in an education effort which can only result in more effective wildlife programs.

If the Officer, or anyone for that matter, is to convey ideas and information to the public he must be aware of all, or many, of the aspects of the problem. One of the common statements asked of hunters, by nonhunters, is “Why do you hunt?” A simple, “I like the out-of-doors” just isn't enough. Also, the argument that hunters are playing a major role in wildlife management may not suffice for many hunted species.

Talking to Young People

Grade School and Middle School aged children are especially concerned with the killing of animals. This is a healthy sign, but must be kept in perspective. Talk to this age group should not be pro or antihunting. A straight ecological approach is fine, but a concerted effort should be made to separate what they learn on television from Disney or Lassie from scientific facts. All too often these programs portray wild animals escaping predators, befriending humans, and living forever.

Children, and adults as well, react more to emotion, sentiment and the use of anthropomorphism than they do scientific facts. Man tends to humanize other animals such as “the big bad wolf, the sly fox, the gentle lamb, and more recently Mickey Mouse, Bambi Deer and Smokey Bear.” With this as a background young children, and again adults as well, do not understand a basic ecological tenet that death is essential to life. In a subdued approach it should be pointed out that hunters kill animals, but so do cattle, sheep, cars, research

labs which use animals for man's benefit, etc. Most of our children grow up in an urban environment far withdrawn from the realities of nature.

Talking to Hunters

When talking to sportsmans clubs or groups of hunters, the role that they have played in bringing about antihunting sentiment should be emphasized. It is now time for all hunters to become sportsmen, and to cleanse their own ranks. The ethics of sportsmanship is not a fixed code, but must be formulated and practiced by the individual, with no referee but the Almighty. It is up to hunters themselves and those who would be advocates of the sport to bring about a re-emphasis on quality in hunting and to return to hunting those high standards which have won it respect in the past.

Now how can this be accomplished? Urge hunters to educate their friends or fellow club members on all the facets of this problem. All hunters do not have ethical guidance from parents or friends when they are learning to handle a gun. Perhaps hunter ethics could be a topic at hunter safety clinics. Clubs should be urged to sponsor such clinics, spending time on things such as deer biology, why people do not understand hunting, what happens when one hunter breaks a law and why the rights of private landowners should be respected.

Secondly, when talking to hunters, or potential hunters, we emphasize enjoyment of nature, not the kill. Various studies have demonstrated that although success is important, hunting satisfaction is determined by many other variables such as nature, companionship, and solitude (Va. Wildlife - February '78). This information should be conveyed to hunters. It seems that many forget why they like to hunt on the opening day of hunting season.

Finally, hunters should be advised to be understanding of nonhunters. Those who haven't hunted probably have little concept of hunting. Let me cite one example from a nonhunting student in a "Man The Hunter" college course offered at West Virginia University. The students read a passage which indicated that hunters who would shoot ducks sitting on the water were not really sportsmen. This was obvious to every hunter in the class, but the nonhunter saw nothing wrong with this, since he felt that the goal of the hunter was to shoot ducks.

Basic Facts about Wildlife Populations

1. Hunters do not legally kill rare and endangered species.
2. Most game species have stable or increasing populations.
3. Hunters provide conservation leadership.
4. Hunters pay most of the conservation bills.
5. Man evolved as a hunter.
6. Men exploit animals in many ways.

For example, many people believe that hunters kill rare and endangered species. Shaw (1972) in a pilot report showed this to be one of the main reasons why college students in Colorado were against hunting, and Caras (1970) devoted an entire chapter in his book to this subject. The fact is that legal shooting is of no consequence to rare and endangered species.

Most urban dwelling nonhunters believe that wildlife populations are decreasing, and many would attribute this to hunting. The facts do not support this. Almost all game species in the United States have either a stable or increasing population, and nonhunters should be so advised.

Nonhunters today are still worried about the possibility of hunting wiping out wildlife, but they ignore the real damage which occurs from habitat loss. Over 34 million acres of rural land may be lost to urban growth by the year 2000. It is very unlikely that legal hunting will decrease any wildlife populations, but there can be little doubt about losses due to "growth" (e.g., dams, highways, buildings and homes).

Man evolved as a hunter and much of our cultural traditions relate to hunting. While it is certainly debatable whether this makes hunting essential for our well-being, it may explain man's psychological motivation for hunting. The question of why certain men hunt and others do not is extremely complex and very difficult to answer. But the reasons given by many anti-hunters (i.e., hunters are more aggressive than others, hunters are more sadistic, hunting is a substitute for sex) were not apparent when examined by Dr. G. C. Thornton of Colorado State University.

The polarity of hunters, nonhunters or antihunters is keeping us away from the fundamental issues (e.g., habitat loss) which are really threatening our wildlife. Thus, any expediency in making hunters and non-hunters aware of all the facts about the role of hunting, including ethics, economics, improvements needed, and the real effect of legal hunting on wildlife populations, will allow us to move with full speed to more important wildlife problems.

There are numerous ways (including hunting and fishing) in which man exploits or manipulates animals for his benefit. Klein (1973) suggests that man really doesn't need animal protein, skins or fibers for survival, but we still use them. He notes that if it is morally wrong to exploit animals "from the standpoint of interest of the animals themselves, then all exploitation should fall in the same category." Man manipulates animals for the benefit of man. We raise domestic stock, keep pets, have zoos, poison rats, stuff flounder, ride horses, race dogs, hunt deer, show pigeons, kill bulls, etc. As Klein (1973) eloquently describes, it is very difficult to make ethical distinctions in these practices when we relate them to their value to mankind.

Adapted From a Paper Presented at the 27th Southeastern Wildlife Conference, Hot Springs, Arkansas

JARED P. SIMS

Jared is a native of Northern Virginia, having been born in Alexandria and raised in Falls Church. In spite of this urban location, he had frequent and extensive exposure to the outdoors as his family often made extended camping trips throughout the western part of the United States. This, coupled with countless fishing trips with his father, hunting, visits to the family cabin in the Maryland woods and an active role as a Boy Scout, created an early-on love affair with wildlife and nature.

During his growing-up summers, Jared spent much time in the open both as a fisherman and as a construction worker in the Washington, D. C. area. He graduated from Falls Church High School and was accepted in the Co-op program at VPI & SU. Under this program, students alternately attend school for a quarter, work for a quarter in their chosen field, and then return to school. On one of the work quarters, Jared worked for the U.S. Forest Service in Virginia and on another, for the Brunswick Pulp and Paper Company in Georgia.

Jared received a B.S. in Forestry and Wildlife from VPI in 1971. For a time, he worked for the U.S. Corps of Engineers at Buggs Island Lake and in the fall of the same year was employed by the Game Commission as a Forester working under the supervision of James Engle. In 1973, Sims was given full responsibility for the Commission's Forestry program. This consists of a timber-wildlife program which coordinates habitat improvement through timber sales, prescribed burns and reforestation.

Jared enjoys being able to manage the forest resource with the benefit of wildlife uppermost in the list of priorities....something that would be difficult if not impossible in some forestry jobs. He feels that "he can make decisions with wildlife in mind and in doing so, mold and improve the habitat to the benefit of wildlife and humans alike."

Jared and his wife, the former Elizabeth Shedd of Falls Church, Virginia, have one son age 3½ and they make their home in the countryside west of Staunton, Virginia.



Growing Up Outdoors

By Sandy Coleman

ADVENTURE AT THE STREAM

"I don't think I can go to sleep yet, Mom," Matt complained to his Mother.

"I know you're excited, but do you think you would have as good a time on your field trip tomorrow if you were sleepy all day? That's what will happen if you don't really try to go to sleep. I think you can if you will just make the effort."

"Well, okay. I guess you're right, especially since Amy went to sleep hours ago. Goodnight, Mom."

Early the next morning Matt and Amy walked the five blocks to school where they were to meet Miss Duncan and the rest of the Library Club.

Soon the group of excited children with Miss Duncan in the lead were walking through the woods down toward the stream where they planned to spend most of their day.

"There's going to be a special surprise for all you children when we get there," Miss Duncan promised the group. "We're going to be able to watch something very interesting, something that you don't see every day."

"What is it?" the children chorused.

"Well, you'll have to just wait and see," Miss Duncan replied.

The children all exchanged bewildered glances.

When they got to the stream they saw a big green truck with a green and white shield on the side. The children could read *Virginia Game Commission* on the shield, with the words *Fish Division* written under it. A man that Matthew recognized as a Game Warden was helping several other men net fish from the back of the truck. Then the children watched as the fish were carefully placed in the stream.



Illustration by Diane Grant

"What are they doing, Miss Duncan?" Matt asked.

"Well, why don't we ask them?" Miss Duncan answered.

Two of the men introduced themselves as Fish Biologists with the Commission of Game and Inland Fisheries. The third was, as Matthew had correctly guessed, a Game Warden.

"We're stocking this stream with trout," one of the fish biologists told the children.

"I thought the fish grew in the stream," one of the children said after thinking about what the biologist had told them.

"Some trout in some streams are native, but if we didn't put them in this stream and in others like it, then there wouldn't be any in them at all," the biologist replied.

"Where do the fish that you stock come from?" Matt asked.

"They are raised in rearing stations. We have several in Virginia. The fish are taken when they are eggs. When they hatch and become fry and later fingerlings they are

cared for by Game Commission fish culturists. After 15 to 18 months, most of them have reached a size of about nine inches and are ready for stocking in Virginia's lakes and streams," the biologist explained.

"Are trout the only fish that you stock?" one of the children asked.

"No, we stock other fish like stripers, largemouth bass, catfish, crappie and muskellunge. Our striped program is one that we are particularly proud of," the second biologist told the children.

Later that day, when Matt and Amy were getting ready for bed, they talked excitedly about what they had seen that day.

"I hope we go on a field trip again really soon," Amy sighed.

"I do, too. But what I want to do even more than that is go back to the stream and try to catch some of the trout that we saw being put in there today," Matt replied.

Amy agreed and soon the two were making plans for their expedition in search of trout. Although the children didn't know it, many others were planning just the same thing.

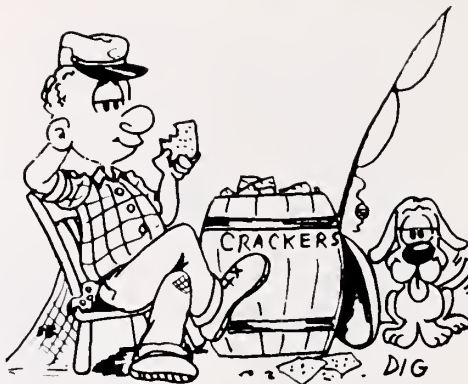
IT APPEARS TO ME

BY CURLY

....A PERSON OUGHT TO HAVE ONE

All of us are consumers and as such we have had varying degrees of success or misfortune with goods and products, ranging from hay balers to microwave ovens. It used to be that a body would find it difficult to get information about where or how an ailing gadget could be fixed. Locating someone to listen to complaints was well nigh impossible.

Well sir, things have improved more than somewhat. Now there are a number of toll free telephone hot-lines that make it possible to contact a sympathetic ear. Here are some numbers which you might find to be useful. *National Highway Traffic Safety Administration* (auto safety problems, etc.) 800/424-9393. *Consumer Product Safety Commission* (assists citizens with product safety problems) 800/638-2666. *Interstate Commerce Commission* (consumer assistance pertaining to interstate moves and train and bus problems) 800/424-9312. *National Solar Heating and Cooling Info Center* (details pertaining to commercial availability of solar heating and cooling installations) 800/523-2929. *Fair Housing and Equal Opportunity* (information pertaining to housing problems, especially in regard to discrimination) 800/424-8590. Of special interest to the residents of Fairfax County is the *Fairfax County Consumer Protection Commission*. You folks can get some help with your problems by writing to the FCCPC at 4031 University Dr., Fairfax, Virginia 22030 or by calling 703/691-3214.



I hate to mention tax time but you know the saying about death and....anyhow it is that time soon and Uncle Sam's folks have produced a free publication "Your Exemptions and Exemptions for Dependents" IRS Publication 501 which you can get by calling the toll-free number printed on the back of your 1040 or 1040A.

....FOR YOUR BOOKSHELF

Fantastically foul weather this winter has crippled major portions of the country and I am certain that the forthcoming spring will never have looked so good. For those of you that are really "into weather" there is a book entitled *Weather Almanac* which bears your consideration. Although the price seems steep at first glance, the \$25.00 tag is well worth the tremendous amount of detail which has been accumulated in this 728 page hard back. In it you will find data covering more than forty years, listing wind conditions (direction and speed), snowfall, first and last frosts, temperature, sunshine and many other facts. Not only is this a suitable text book type of publication, it also could serve as a valuable planning docu-

ment for trips, prospective retirement locations or just every day living. Gale Research Company, Book Tower, Detroit, Mich. 48226 is the source.

If you have ever dreamed of one day building your own house just the way you want it and using the basic drive for quality and uniqueness that beats in your breast....you are not alone. In fact some good folks have done it with great satisfaction and success. *Dwelling* (Making and Living In Your Own Space) is a recent publication by Doubleday & Co., Inc., which describes in detail how some do-it-themselfers built their own using their own designs and materials which were either "scrounged" or purchased for pennies. *Dwelling*, is dedicated "to all the children, women and men builders, friends and neighbors, who have kept their courage and have created what, in their hearts, felt right". It is in paper back, sells for \$5.95 and is available from Doubleday & Co., Inc., 245 Park Ave., New York, New York 10017..

....AND THEN

Last month we bemoaned the fact that recycling projects were being forgotten. There are, however, some good folks working on keeping these efforts alive. You can find out about it by contacting the Office of Solid Waste, U.S. Environmental Protection Agency, Washington, D. C. 20460 or at the National Wildlife Federation's Solid Waste Project, 1412 16th Street, N.W., Washington, D. C. 20036.

VIRGINIA BLUEBELLS

BY ELIZABETH MURRAY

ILLUSTRATED BY LUCIA GOODWIN

I have frequently mentioned in this column the dangers of relying on the common names of flowers, and the misleading channels into which such reliance can lead. This is very adequately illustrated by this month's flower, one of whose common names is bluebells. Sometimes it is called Virginia bluebell or Virginia cowslip. The scientific name is *Mertensia virginica* and it belongs to the Boraginaceae or borage family.

In England the word "bluebell" conjures up most frequently the blue wild hyacinth *Endymion* (or *Scilla*) non-scripta (*Liliaceae*) which in springtime carpets the countryside in England's famous bluebell woods. It is introduced and seen occasionally this side of the Atlantic. The name "bluebell" or "harebell" is also given both here and in England to *Campanula rotundifolia* (*Campanulaceae* which is sometimes called the bluebell family), a delicate, late summer flower of dry, chalky grasslands. "Cowslip" in England nearly always means *Primula veris* (*Primulaceae*), a well-known grassy meadow flower, here occasionally established in the wild from cultivated plants. One species of *Mertensia* grows in the British Isles. A quite rare inhabitant of coastal shingle areas in the north of England and Scotland is *M. maritima* whose common name is oyster plant because it has thick, fleshy leaves which are said to taste of oysters. We do not have *M. maritima* in Virginia but it does occur in coastal areas further north, as does also another species, *M. paniculata*. The common name given to the whole genus is lungwort.

So common names can mean a wide variety of different flowers to different people, and if we are going to talk about bluebells, we must be careful to specify which ones we mean. Today, I mean *Mertensia virginica* belonging to the Boraginaceae and called variously bluebells, Virginia bluebells, Virginia cowslip or Roanoke bells. The flower blooms quite early in the spring in suitable localities throughout the state.

The borage family contains mostly rough, hairy herbs with alternate, entire or shallowly-toothed leaves, five sepals sometimes joined at the base, five petals always joined, five stamens mounted on the corolla-tube of these joined petals, a single style and a four-chambered ovary. The family has a wide distribution, particularly in the northern hemisphere with



about nineteen genera represented in North America by indigenous species and quite a few more introduced members which have become established, such as *Symphytum* (comfrey), *Lycopsis* (bugloss), *Anchusa* and *Echium* (Viper's bugloss).

Lucia Goodwin did research at Monticello for some years and the *Mertensia* which she has painted here came from the grounds of Monticello, from the woods which slope down to the river and are full of all the best wild flowers in early spring. It is curious that Jefferson, so knowledgeable in so many different fields including natural history, did not know the name of this flower. He observed it and wrote on the very first page of his garden book on April 16, 1766--"a bluish-colored funnel-formed flower in low grounds in bloom", and then twenty-two days later on May 7--"blue flower in low grounds vanished." This observation and careful recording of appearance and disappearance is quite characteristic of Jefferson and is incidentally a good statement of the average blooming period for *Mertensia* today, but one would have expected him to have known the name of the flower. *Mertensia* was named for Franz Karl Mertens, a distinguished German botanist who was a contemporary of Jefferson although I do not believe that they ever met.

How fortunate that we still have this "bluish, funnel-formed flower" to grace our spring! So many of the early flowers are small and delicate, it is a refreshing change to have this robust, sturdy herb, blooming with the first proper spring weather to tell us in no uncertain terms that winter is behind us. Look out for it in the Monticello grounds, or any other rich, low woods you happen to pass through in the next couple of months.

Bird of the Month

THE TOWHEE

BY JOHN W. TAYLOR

To really get the towhee's point of view, one must be willing to get on hands and knees amid the honeysuckle and poison ivy, or else crawl belly-down through laurel thickets and smilax vines.

For the towhee is a ground bird, rarely venturing more than a half dozen feet high, and then only to gain some prominence from which to voice its territorial claims. There, with the leaf-mold and woods litter, the towhee is at home. And no place could be better for a bird that likes to scratch around like this one does. Scratching is its main occupation, an activity it pursues with special vigor, using both feet at the same time, with a rapid succession of backward kicks.

This trick is accompanied by a flicking of the wings and tail, showing flashes of white against a dark ground. (Both male and female have spots of white in the wing and near the top of the tail. Both have rusty-red flanks as well, but the upperparts of the male are a rich black, those of the female, brown.)

The color pattern is quite like that of the robin, prompting some to use the name "ground robin" for the towhee. Others call it "chewink" holding that this is a better phonetic translation of the bird's call than

"towhee". One noted ornithologist felt that the bird distinctly pronounced his wife's name, "Marie."

The scientific name, *Pipilo erythrophthalmus* means roughly, "red-eyed chirper." The generic term *Pipilo* is from the latin *Pipo*, meaning to chirp. *Erythros* is greek for red, and *ophthalmos* means eye. (The eastern towhee does have a red eye.)

There are five other North American birds belonging to the genus *Pipilo*, several quite different of plumage. Our eastern bird, the rufous-sided towhee, ranges as far west as the Great Plains. It shows decidedly southern predilections, and, though ranging north to the Canadian border, winters in the south Atlantic and Gulf states.

Locally, the towhee is a common breeding species statewide, from Tidewater to the highest mountains. Its numbers drop as cold weather approaches, and most of the birds forsake the western counties. In the eastern portion of the state it is not uncommon even in winter, though its presence then depends on the severity of the season.

In extreme southeastern Virginia, in the vicinity of Back Bay, the southern race of the towhee, which has white eyes instead of red, reaches its northern limit.



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